新穎飼料原料蛋白質應用於未來水產飼料產業探討

郭怡君 [1,*]

[1] 全興國際控股股份有限公司。台灣 桃園市。

摘要

近幾十年，水產飼料大量仰賴海洋資源及大豆產品。這兩項產品除了可應用在水產飼料，提供高品質蛋白質及油脂以外，同時也可供人食用。世界人口近年來快速增長，導致糧食需求上升，然而在有限的土地及過度捕撈的現實下，尋找更適合的新穎成分及飼料，以保持水產養殖永續發展，也顯得更為重要。

現已有許多關於傳統及新穎成分之研究，而研究指出多數新穎成分在生產過程中，排碳量較傳統成分少，對環境也較友善，因而受到關注。然而，現在面臨的問題在於這些新穎成分能否提供足夠的數量及合理的成本？

隨著科技發展，近年來新穎成分之生產技術有顯著的進步，有越來越多新穎成分開始商業化大量生產。其中，有許多可應用於水產飼料。例如，昆蟲粉便是其中之一。

在全興，我們做了許多新穎成分的動物實驗，評估不同新穎成分對於魚蝦的效果，評估的指標包含營養價值、消化率、適口性、氨基酸平衡、脂肪酸平衡、礦物質以及動物生長、存活率和動物健康，以及經濟效益。昆蟲粉普遍含有高蛋白質、熱量及脂質。根據以上這些效益，我們的研究指出昆蟲粉在未來有機會可以部分取代魚粉。在法規方面，昆蟲粉也已在 2017 年通過歐盟委員會規則，獲得許可可以用在水產飼料中。

另一方面，昆蟲粉做為新穎飼料原料需要進一步探討其潛在的風險，例如生物積累、氨基酸或脂肪酸缺乏、甲殼質含量、適口性和消化率之問題。或許這些就是昆蟲粉尚未大量應用在水產飼料的原因。

我們依然需要透過更多試驗，評估各項新穎成分之效益。

關鍵詞：水產飼料、昆蟲粉、魚粉替代。

*論文聯繫人
E-mail: jennifer_kuo@grobest.com

Discussion on the Future Application of Novel Feed Protein to the Aquatic Feed Industry

Jennifer Kuo[1,*]

[1]Grobest Group Limited, Taoyuan City, Taiwan, ROC.

Abstract

Over the decades, aquatic feed products have largely depended on marine resources and soy production. Both fishery and soy products provide quality protein and oil for human consumption as well. The world population has increased rapidly in recent years so the demand for food has increased dramatically. With the challenges of limited land for cultivation and overfishing issues in the ocean, the need to find alternatives for more sustainable feed products has become essential for a sustainable aquaculture industry.

There is a lot of research being done on alternatives that include traditional ingredients and novel ingredients. We now know, the production of most novel ingredients have a lower carbon footprint and are more environmentally friendly. This has attracted lots of attention. However, the challenges today are mostly on the availability in large volumes and at an affordable cost.

We have recently seen production technology for some novel ingredients improve, so more potential novel ingredients are being commercialized and are available in the market. Many of them are good alternatives to be included in aquatic feed, and one such example is insect meal.

At Grobest, we have conducted numerous animal trials to evaluate the performance of different novel ingredients on shrimp and fish. The indicators for evaluation we consider when using alternatives include nutritional value, digestibility, palatability, amino acid balance, fatty acid balance, minerals, as well as animal growth, survival rate, animal health, and economic benefit.

With regards to insect meals, they are often high in protein, energy, and lipids. With these benefits, our research show that insect meals may in the future partially replace fish meal. In terms of regulations, insect meal has already been approved by the EU commission regulation as part of feedstuff ingredients in aquatic feed.

We must, however, conduct further assessment on potential dangers or drawbacks of insect meals. For example: bioaccumulation, deficiencies in amino acids or fatty acids, chitin content, palatability, and digestibility. The above may be reasons why insect meals have yet to be utilized widely in aquatic feed.

Overall, more trials are still required to further evaluate the benefits of novel ingredients.

Key words: Aquatic feed, Insect meal, Fish meal substitute

*Corresponding author.
E-mail: jennifer_kuo@grobest.com